

Claims:

1. (Currently amended) A system for sensing the oxygenation of tissue of a transplanted organ relative to adjacent native tissues within a patient's body comprising:

a housing configured to be implanted between a transplanted tissue and a different native tissue within the patient's body, the housing including a first surface configured to rest against the first-transplanted tissue, and a second outer surface opposite from the first outer surface, configured to rest against the native tissue;

a first sensing system proximate to the first surface configured to sense oxygenation of the transplanted tissue;

a second sensing system proximate to the second surface configured to sense oxygenation of the native tissue; and

a processing system in communication with the first and second sensing systems configured to compare the oxygenation sensed by the first and the second sensing systems, and to determine based on the comparison whether the condition of the transplanted tissue is normal.

2-14 (Cancelled).

15. (Original) The system of claim 1, further including at least one transmitting element configured to deliver energy to the tissue proximate to the first and second surface.

16. (Previously presented) The system of claim 1, comprising a third sensing system configured to sense a physiological property of tissue proximate to the housing that is different from the oxygenation sensed by the first and second sensing systems.

17. (Original) The system of claim 1, wherein at least portions of the first and second sensing systems are embedded within the housing behind material that is optically transparent.

18. (Original) The system of claim 1, wherein the processing system is located within the housing.

19. (Previously presented) The system of claim 1, wherein the processing system is external to the implantable housing.

20. (Original) The system of claim 1, further including an antenna for receiving power.

21. (Original) The system of claim 1, further including an antenna for transmitting signals.

22. (Original) The system of claim 1, further including an antenna for receiving signals.

23. (Canceled).

24. (Previously presented) The system of claim 1, further including a display that is configured to depict information about the oxygenation sensed by the first and/or second sensing systems.

25. (Previously presented) The system of claim 1, further including a display that is configured to depict data representing the comparison between the oxygenation sensed by the first and second sensing systems.

26. (Original) The system of claim 1, wherein the first and second sensing systems include optical fibers.

27. (Original) The system of claim 1, further including an anchor configured to stabilize the position of the device relative to a tissue.

28-61. (Cancelled).

62. (Previously presented) A method of monitoring the condition of a tissue comprising:

receiving information from a first sensing system and a second sensing system, wherein the first and second sensing systems are configured to sense a physiological property of a tissue;

processing information from the first and second sensing systems to compute a difference in information sensed by the first and second sensing systems;

displaying data regarding the difference between the information

received from the first and second sensing systems;

positioning an icon representing a device depicted on the display relative to a depiction of the tissue to indicate the position of the device within the body; and

monitoring the information received from the first and second sensing systems to evaluate the condition of the tissue over time.

63-67 (Cancelled).

68. (Previously presented) A method of monitoring the condition of a tissue comprising:

implanting a device within a body in proximity to a tissue to be monitored, wherein the device includes the first sensing system and a second sensing system, wherein the first and second sensing systems are configured to sense a physiological property of tissue;

orienting the device such that the first sensing system senses the physiological property of a first region of a tissue, and the second sensing system senses the same physiological property from a second region of a tissue;

displaying the orientation of the device relative to the first and the second region of the tissue on a display; and

positioning an icon representing a device depicted on the display relative to a depiction of the tissue to indicate the position of the device within the body.

69. (Cancelled).

70. (Previously presented) A method of monitoring the condition of a tissue comprising:

implanting a device within a body in proximity to tissue to be

monitored, wherein the device includes the first sensing system and a second sensing system, wherein the first and second sensing systems are configured to sense a physiological property of tissue;

orienting the device such that the first sensing system senses the physiological property of a first tissue, and the second sensing system senses the same physiological property from a second tissue;

displaying the orientation of the device relative to the first and the second tissue on a display; and

positioning an icon representing a device depicted on the display relative to a depiction of the tissue to indicate the position of the device within the body.

71-74. (Cancelled).

75. (Previously presented) A system for monitoring tissue condition comprising:

a housing configured to be implanted between a first tissue and a different second tissue within a patient's body, the housing including a first surface located on a first outer side of the housing configured to rest against the first tissue, and a second surface located on a second outer side of the housing, opposite from the first outer side, configured to rest against the second tissue;

a first sensing system proximate to the first surface configured to sense a physiological property of the first tissue;

a second sensing system proximate to the second surface configured to sense the same physiological property of the second tissue; and

a processing system in communication with the first and second sensing systems configured to compute a difference between the physiological property oxygenation sensed by the first and second sensing systems;

a display configured to depict information about the physiological

property sensed by the first or second sensing systems, and to depict an icon representing a device on the display relative to a depiction of the tissue to indicate the position of the device within the body.

76-77 (Cancelled).

78. (Previously presented) The system of claim 1, wherein the processing system is configured to determine the condition of the transplanted tissue to be normal:
if the oxygenation sensed by the first sensing system is normal.

79. (Previously presented) The system of claim 1, wherein the processing system is configured to determine the condition of the transplanted tissue to be abnormal:

if the first sensing system senses an abnormally low oxygenation
and the second sensing system senses normal oxygenation.

80. (Previously presented) The system of claim 1, wherein the processing system is not configured to determine the condition of the transplanted tissue to be abnormal:

if the oxygenation sensed by the first and the second sensing
system are abnormally low.

81. (Previously presented) The method of claim 62, wherein the physiological property is oxygenation and wherein the condition of the first tissue is determined to be normal:

if the oxygenation sensed by the first sensing system is normal.

82. (Previously presented) The method of claim 62, wherein the physiological property is oxygenation and wherein the condition of the first tissue is determined to be abnormal:

If the sensed oxygenation sensed by the first sensing system is abnormally low and the oxygenation sensed by the second sensing system is normal.

83. (Previously presented) The method of claim 62, wherein the physiological property is oxygenation and wherein the condition of the first tissue is not determined to be abnormal:

if the oxygenation sensed by the first and the second sensing system are abnormally low.

84. (Previously presented) A method for determining the condition of a transplanted tissue within a patient's body relative to the condition of surrounding tissue comprising:

implanting a sensing device within the patient's body in proximity to a transplanted tissue and a different native tissue, wherein the device includes the first sensing system and a second sensing system;

orienting the device such that the first sensing system senses the oxygenation of the transplanted tissue, and the second sensing system senses the oxygenation of the native tissue;

comparing the sensed oxygenations by the first and the second sensing systems; and

determining whether the condition of the transplanted tissue is normal based on the comparison.

85. (Currently amended) The method of claim ~~85~~84, wherein the condition of the transplanted tissue is determined to be normal:

if the sensed oxygenation of the transplanted tissue is normal.

86. (Currently amended) The method of claim ~~85~~84, wherein the condition of the transplanted tissue is determined to be abnormal:

if the sensed oxygenation of the transplanted tissue is abnormally low and the sensed oxygenation of the second tissue is normal.

87. (Currently amended) The method of claim ~~85~~84, wherein the condition of the transplanted tissue is not determined to be abnormal:

if the sensed oxygenation by the first and the second sensing system are abnormally low.